Math 357
Long quiz 03

2024–01–31 (W)

Your name: _____

Let R be a commutative ring, and let t be an indeterminate. Consider the polynomial ring $R[t]$.

(a) Define the degree function, deg, on $R[t]$.

(b) Let $p, q \in R[t]$. Prove that if R is an integral domain, then

$$\deg pq = \deg p + \deg q$$

Give an example to show that this equation can fail if R is not an integral domain.